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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/471,244	12/23/1999	MAGED E. BESHAI	88-882836US	7184

7590 05/03/2004
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EXAMINER

HAMILTON, MONPLAISIR G

ART UNIT	PAPER NUMBER
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2135

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DATE MAILED: 05/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/471,244

Applicant(s)

BESHAI, MAGED E.

Examiner

Monplaisir G Hamilton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-24 and 26-43 is/are pending in the application.
- 4a) Of the above claim(s) 1-12 and 25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 13-14, 28, 31-32, 34, 35 and 37-41 is/are rejected.
- 7) ☐ Claim(s) 15-22, 26, 27, 29, 30, 33, 36, 42 and 43 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date Z.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The communication filed on 2/20/04 cancelled Claims 1-5 and 25, withdrew Claims 6-12 and added Claims 31-43. Claims 13-24 and 26-43 remain for examination.

Election/Restrictions

2. Claims 6-12 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Election was made **without** traverse in Paper No. 6.

Information Disclosure Statement

3. The information disclosure statement (IDS), Paper No. 7, filed 1/9/04, is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Response to Arguments

4. Applicant's arguments, see Paper No. 8, filed 2/220/04, with respect to Claims 1-5 and 13 have been fully considered and are persuasive. The Objection of Claims 1-5 and 13 has been withdrawn.

Applicant's arguments, see Paper No. 8, filed 2/20/04, with respect to the rejection of Claims 1-3 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6052683 issued to Irwin, herein referred to as Irwin in view of US 6307855 issued to Hariguchi, herein

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referred to as Hariguchi, Claims 4 and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6052683 issued to Irwin, herein referred to as Irwin in view of US 6307855 issued to Hariguchi, herein referred to as Hariguchi further in view of US 6563823 issued to Przygienda, herein referred to as Przygienda, Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 6052683 issued to Irwin, herein referred to as Irwin in view of US 6307855 issued to Hariguchi, herein referred to as Hariguchi further in view of US 5909440 issued to Ferguson, herein referred to as Ferguson and Claims 13-19 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6052683 issued to Irwin, herein referred to as Irwin in view of US 6526055 issued to Perlman herein referred to as Perlman, have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of IP Lookup using Multiway and Multicolumn Search by Lampson et al.

Claim Objections

5. Claim 18 is objected to because of the following informalities: "x, y" are undefined. Appropriate correction is required. Applicant has argued that x,y are dummy variables and one of ordinary skill in the art would recognize this. Examiner respectfully disagrees with applicant. The variable x and y can take on many values which include coordinates of a Cartesian system, longitude, latitude values, and many other values. Applicant's statement that these variables are dummy variables does not efficiently define the scope of these variables. Please see, page 15-page16 for clarification on the use of these variables.

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Claim 25 is objected to because of the following informalities: "H, K, x, y" are undefined. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. Claim 31, 35 and 41 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant has claimed the secondary search units provide parallel searching for distinct addresses. Examiner finds no support for this limitations in the original disclosure.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 13, 14, 23, 24, 28, 31, 32, 34, 35 and 37-41 are rejected under 35 U.S.C. 102(b) as being anticipated by IP Lookups using Multiway and Multicolumn Search by Lampson et al.

Referring to Claims 13:

Lampson discloses a method of resolving B bit long addresses of packets into prefixes of any length up to B by the use of a data structure which comprises a length sorted table Q () and a plurality of secondary search units (), table Q containing data related to prefixes of length not exceeding A, $A \leq B$ and each secondary search units including tables V and T which are in one-to-one correspondence to one another and each consists of a $2^x M$ memory, M being a positive integer comprising steps of;

(1) indexing table Q by using the first A bits of an address to generate a corresponding prefix of length equal to or less than A, or a pointer to a secondary search unit (page 1251, Section IV, Precomputed 16 Bit prefix table, paragraphs 1-3);

(2) accessing table V of the secondary search unit indicated by the pointer using each successive remaining bit of the address in order (page 1252, Section V-A, Multiway Binary Search: Exploiting the Cache line, paragraph 1);

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(3) accessing table T of the secondary search unit at each successive location corresponding to the location of table V accessed in step (2 page 1253, Section V-A, Multiway Binary Search: Exploiting the Cache line, paragraph 1; Step 3); and

(4) reading a valid data contained at the location in table T, the valid data being a prefix of length more than A (page 1253, Section V-A, Multiway Binary Search: Exploiting the Cache line, paragraph 1; step 3).

Referring to Claim 14:

Lampson discloses the limitations of Claim 13 above. Lampson further discloses steps (2)-(4) are performed for at least two of said addresses in at least two of the secondary search units in parallel (page 1253, Section V-A, Multiway Binary Search: Exploiting the Cache line, paragraph 1; step 3).

Referring to Claim 23:

Lampson discloses an apparatus for address translation of a packet, comprising:
a parsing block for receiving the packet and parsing an address of the packet, the address having length B, B being a positive integer (page 1248, Section 1, Introduction, paragraph 2);
an indexing block for directly accessing a sorted prefix directory by the first A binary bits, the sorted prefix directory containing translated prefixes of length N not exceeding A and data specifying one of a plurality of secondary search units (page 1251, Section IV, Precomputed 16 Bit prefix table, paragraphs 1-3);

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the plurality of secondary search units each having a secondary memory for searching in parallel for different prefixes of length N greater than A wherein each secondary memory comprises tables V and T containing interleaved tree branches (page 1252, Section V, Multiway Binary Search: Exploiting the Cache line, paragraphs 2), each of said tree branches corresponding to an entry in said sorted prefix directory (page 1253, Section V-A, Multiway Binary Search: Exploiting the Cache line, paragraph 1).

Referring to Claim 24:

Lampson discloses the limitations of Claim 23 above. Lampson further discloses each prefix of length longer than A belongs to a specific branch and each secondary memory contains prefixes of at least one branch (page 1251, Section IV, Precomputed 16 Bit prefix table, paragraphs 3).

Referring to Claim 28:

Lampson discloses an address translation apparatus for telecommunications networks in which packets are transported to addresses contained therein, comprising: an address separation unit for separating from a packet an address to be translated (page 1248, Section 1, Introduction, paragraph 2); primary translation unit having a primary translation table for translating the address to a prefix (page 1251, Section IV, Precomputed 16 Bit prefix table, paragraphs 3), the primary translation table containing prefixes whose widths are less than a predetermined value (page 1251, Section IV, Precomputed 16 Bit prefix table, paragraphs 1-3) and locations of branch search data structures in a secondary search units (page 1251, Section IV, Precomputed

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16 Bit prefix table, paragraphs 3); and a plurality of secondary search units for performing secondary searches in parallel (page 1252, Section V, Multiway Binary Search: Exploiting the Cache line, paragraphs 2), each secondary unit having the branch search data structure for performing each secondary search (page 1252, Section V, Multiway Binary Search: Exploiting the Cache line, paragraphs 2) and translating the address to a prefix, if the primary translation table indicates the location of a branch search data structure to begin the secondary search (page 1253, Section V-A, Multiway Binary Search: Exploiting the Cache line, paragraph 1).

Referring to Claim 31:

Lampson discloses the limitation of Claim 28 above. Lampson further discloses said secondary searches are concurrently performed for a number of distinct addresses not exceeding the number of secondary search units in said plurality of secondary search units (page 1252, Section V, Multiway Binary Search: Exploiting the Cache line, paragraphs 2).

Referring to Claim 32:

Lampson discloses a method of translating addresses each comprising a prefix and a remaining part, said prefix having a respective unknown number of bits, the method comprising steps of:

defining an indexing part comprising a predetermined number of bits (page 1251, Section IV, Precomputed 16 Bit prefix table, paragraphs 1-3);

indexing a first memory device containing an indexing table based upon said indexing part (page 1251, Section IV, Precomputed 16 Bit prefix table, paragraphs 1-3);

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determining from said indexing a translation code, a first pointer, and a second pointer; and if said translation code equals a predetermined value, accessing a secondary memory device from among a plurality of secondary memory device, said secondary memory devices corresponding to said first pointer and storing a plurality of prefixes encoded in at least one, tree structure ((page 1248, Section 1, Introduction, paragraph 3); and

performing a tree-search process on one of said at least one tree structures having root defined by said second pointer, wherein said tree-search process identifies the prefix (1253, Section V-A, Multiway Binary Search: Exploiting the Cache line, paragraph 1).

Referring to Claim 34:

Lampson discloses the limitations of Claim 32 above. Lampson further discloses said steps of indexing, determining, and accessing are executed in a sequential temporal order (page 1253, Section V-A, Multiway Binary Search: Exploiting the Cache line, paragraph 1, Steps 1-3).

Referring to Claim 35:

Lampson discloses the limitations of Claim 34 above. Lampson further discloses said tree-search process for one of said addresses is performed concurrently with said tree-search process for at least one other of said addresses in at least two of said secondary memory devices (page 1252, Section V, Multiway Binary Search: Exploiting the Cache line, paragraphs 2).

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Referring to Claim 37:

Lampson discloses a method of resolving addresses comprising steps of: receiving a first address, said address including a first prefix of unknown length;

indexing, using a fixed part of said first address, an indexing table Q, to read a translation code and data record (page 1251, Section IV, Precomputed 16 Bit prefix table, paragraphs 1-3);

resolving said data record as a translation if said translation code equals a first predetermined value (page 1253, Section V-A, Multiway Binary Search: Exploiting the Cache line, paragraph 1, Steps 1-3);

resolving said data record to two identifiers if said translation code equals a second predetermined value, a first of said two identifiers indicating a target secondary search unit in a plurality of secondary search units and the second of said two identifiers indicating a location in said target secondary search unit; and resolving said first address as unknown if said translation code equals a third predetermined value (page 1253, Section V-A, Multiway Binary Search: Exploiting the Cache line, paragraph 1, Steps 1-3).

Referring to Claim 38:

Lampson discloses the limitations of Claim 37 above. Lampson further discloses said location in said target secondary search unit corresponds to a root of a branch, said branch comprising prefixes having in common said fixed part of said first address (page 1252, Section V, Multiway Binary Search: Exploiting the Cache line, paragraph 2-4).

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Referring to Claim 39:

Lampson discloses the limitations of Claim 38 above. Lampson further discloses wherein said first address, excluding said fixed part of said first address, is further processed by said target secondary search unit to resolve said first address to a translation (page 1251, Section IV, Precomputed 16 Bit prefix table, paragraphs 1-3).

Referring to Claim 40:

Lampson discloses the limitations of Claim 39 above. Lampson further discloses receiving a multiplicity of addresses and for each address in said multiplicity of addresses executing said steps of indexing and resolving to two identifiers (page 1251, Section IV, Precomputed 16 Bit prefix table, paragraphs 1-3).

Referring to Claim 41:

Lampson discloses the limitations of Claim 40 above. Lampson further discloses at least two of said secondary search units concurrently process at least two addresses in said multiplicity of addresses (page 1252, Section V, Multiway Binary Search: Exploiting the Cache line, paragraphs 2).

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Allowable Subject Matter

8. Claims 15-22, 26-27, 29-30, 33, 36 and 42-23 and are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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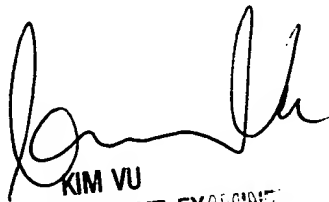
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monplaisir G Hamilton whose telephone number is (703) 305-5116. The examiner can normally be reached on Monday - Friday (8:00 am - 4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Y Vu can be reached on (703) 305-4393. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Monplaisir Hamilton


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